

# TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE

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Subject: MINK\*

## General

The mink (*Mustela vison*) is a predatory, semiaquatic mammal that is generally associated with stream and riverbanks, lakeshores, fresh and saltwater marshes, and marine shore habitat. Mink are chiefly nocturnal and remain active throughout the year. The species is adaptable in its use of habitat, modifying daily habits according to environmental conditions, particularly prey availability. The species is tolerant of human activity and will inhabit suboptimum habitats as long as an adequate food source is available; however, mink will be more mobile and change home ranges more frequently under such conditions.

## Food

The mink's foraging niche is typically associated with aquatic habitats. The species exhibits considerable variation in its diet according to season, prey availability and habitat type. Predation by mink in North Dakota appeared to be directed toward the most vulnerable individuals among available prey species. Preferred mink prey can be broadly categorized into three groups: (1) aquatic [e.g. fish and crayfish (*Cambarus* spp.)]; (2) semiaquatic [e.g., waterfowl and water associated mammals such as the muskrat (*Ondatra zibethicus*)]; and (3) terrestrial (e.g., rabbits and rodents) (Chanin pers. comm.). If prey in any one of these categories is available throughout the year, the habitat may be unsuitable for mink.



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\*Information taken from Ecoregion M3113 Handbook and Habitat Suitability Index Models, Wildlife Species Narratives (literature searches), U.S. Fish and Wildlife Service, various dates between 1978-1984.

Fish occurred more frequently (59 percent) in the mink's diet in Idaho than did any other prey category. Unidentified cyprinids, ranging in length from 7 to 12 cm (2.7 to 4.7 inches) were the major group of prey fish. Larger fish, represented by salmonids, accounted for 9 percent of the diet. These larger fish were believed too large for mink to prey on and were probably scavenged. Fish, shellfish, and crustaceans were the major food items of mink inhabiting coastal habitats of Alaska and British Columbia.

One study reported that birds, mammals, amphibians, and reptiles accounted for 78 percent, 19 percent, 2 percent, and 1 percent respectively of the vertebrate prey consumed by mink in North Dakota prairie marshes. Waterfowl accounted for 86 percent of the avian prey with coots (*Fulica americana*), ducks (*Anseriformes*), and grebes (*Podicipediformes*) comprising 70 percent, 11 percent, and 5 percent respectively of the total. The relative amount of each prey species eaten closely paralleled the relative abundance of the species. The high use of avian prey in North Dakota prairie marshes was believed to be a result of high waterfowl densities and the scarcity of other prey species, particularly fish and crayfish. Another study concluded that predation by mink was the principal cause of duckling mortality in their North Dakota study. Waterfowl were also an important component of the diet of mink in Idaho during spring and early summer when young ducks were abundant. Fish, crayfish, rodents, and birds are the principal prey of mink in Sweden. Fish are preferentially consumed in winter and spring due to their increased vulnerability resulting from low water levels and low temperatures. Crayfish occurred most frequently in the mink's diet during the summer months in Sweden. Crayfish were also the most important component of the mink's summer diet in Quebec.

With the approach of fall, small terrestrial mammals play an increasingly important role in the mink's diet. Small mammals associated with riparian habitats accounted for 43 percent of the mink's diet in Idaho. Small mammals accounted for more than 20 percent of the fall/winter diet in North Carolina. Rabbits may comprise up to 50 percent of the mink's diet even in areas where aquatic prey are abundant. Muskrats have been reported to be an important part of the mink's diet throughout its range. One study reported that muskrats were a major component of the winter diet of mink in southern Michigan. However, one researcher believed that muskrats became a significant food source for mink only during periods of muskrat overpopulation, epidemic diseases of muskrats, or drought. Muskrats were the most important component of the mink's diet in Ontario. Predation on muskrats increased during the fall months as marsh water level decreased. One researcher believed that only adult male mink were large enough to consistently prey upon muskrats.

#### Water

The majority of mink activity in Quebec was within 3 m (9.8 ft) of the edges of streams. All of the mink observations in a Michigan study were within 30.4 m (100 ft) of the water's edge. The majority of mink den sites recorded in a British study were within 10 m (32.8 ft) of the water's edge. Mink den sites in Minnesota were within 69.9 m (200 ft)

of open water. Den sites in Idaho were 5 to 100 m (16.4 to 328 ft) from water, and mink were never observed farther than 200 m (656 ft) from water. Mink activity in Quebec dropped sharply as streamflow increased. One study reported that the use of aquatic foods by mink in Missouri increased as water levels decreased.

#### Cover

Mink in Michigan and Sweden are most commonly associated with brushy or wooded cover adjacent to aquatic habitats. Mink in a Quebec study were normally most active in wooded areas immediately adjacent to a stream channel. During the latter part of the summer when terrestrial foods became a more significant component of the mink's diet, this relationship became less well defined. In England, mink movements of up to approximately 200 m (656 ft) from water are not uncommon, particularly when aquatic prey is scarce. When upland habitats are used by mink, ecotones receive most use due to increased cover and small mammal availability. Mink generally avoid exposed or open areas. Shrubby vegetation furnishing a dense tangle provides suitable cover for mink. Grasses, even if very tall, do not provide adequate year-round cover for the species. The shores of wetland habitats with dense vegetation are the most suitable mink habitat in Michigan. Virtually all mink locations recorded in a North Dakota study were within 20 m (66 ft) of emergent vegetation. Evaluating duckling mortality in North Dakota, one researcher found that predation by mink typically occurred on semipermanent wetlands. Based on a lower rate of predation and less mink sign associated with seasonal wetlands, it was believed that semipermanent wetlands provided more suitable mink habitat than did less permanent wetland types. Wetlands with irregular and diverse shorelines provide more suitable mink habitat than do wetlands with straight, open, exposed shorelines. Habitats associated with small streams are preferred to those associated with large, broad rivers. Mink are most common along streams where there is an abundance of downfall or debris for cover and pools for foraging. Log jams provide excellent foraging cover for mink because they provide shelter for aquatic organisms and security for mink. One study recorded a 52.5 percent increase in mink activity along a stream reach in Quebec that had undergone habitat improvement. Stream alterations consisted of creation of pools up to 1 m (3.38 ft) deep in 50 percent of the stream channel and the placement of logs and other Cover within the channel. Two researchers attributed the mink's use of stream and lake edges to the inability of mink to efficiently forage in open water. Cover associated with aquatic ecotones allowed a stealthier approach and development of specific search strategies by mink. Open water was believed to provide potentially suitable foraging areas only during periods of reduced water volume or high fish density.

The availability of suitable dens may limit the ability of a habitat to support mink. The absence of dry den sites may limit the mink's use of some wetlands. Mink typically select den sites that are close to preferred foraging areas or concentrations of prey items. Mink use several dens within their home range for concealment, shelter, and litter rearing. Maximum consecutive days of occupation of single dens in North Dakota was approximately 40 days. After kits became more

mature, individual dens were used briefly and irregularly. The mean distance covered for 12 den moves in North Dakota was 234 m (767.5 ft). Movements of male mink to new den sites tended to be greater than those recorded for females of the species. New mink dens in Wisconsin were usually within 90 m (295 ft) of the previous den sites. The majority of inter-den movements are made at night and typically occur in or along linear features such as lake shores, riverbanks, stream courses, or hedgerows. One study reported that the most "commonly" used dens were located in cavities beneath tree roots at the water's edge. However, "more preferred," but less common, den sites were within cavities or piles of rocks well above the water line. Another study also identified cavities within or beneath waterside trees as being an important source of den sites for mink. Log jams accounted for 53 percent of the mink dens located in Idaho. Fallen branches, brush, and other debris provided additional den sites. The use of log jams increased during December, probably as a result of decreased accessibility to other den sites due to increasing snow depth. All mink dens located in North Dakota were situated on marsh shorelines and appeared to be in abandoned or seldom used muskrat burrows. The availability of dens for mink use was believed to be related to the suitability of the wetland for muskrats and the amount of shoreline grazing by livestock. Active mink dens were not located on heavily grazed shorelines. One researcher characterized prime mink habitat in the north-central region of the United States as being choice muskrat habitat.

#### Reproduction

No information relating specifically to habitat needs for reproduction was found in the available literature.

#### Interspersion

The home ranges of mink tend to approximate the shape of the water body along which they live. A mink's use of its home range varies in intensity due to varying prey availability. During daily activity periods, mink move back and forth in a restricted "core area" which typically does not exceed 300 m (984 ft) in shoreline length. Eventually, the mink will use another den within the home range as a base and will intensively forage within an associated core area. The mink's use of its home range also shows temporal variation in response to seasonal differences in prey availability. Movements recorded in England indicated a general reduction in activity in winter relative to summer. Fewer den sites were used, occupancy at individual dens was of longer duration, and daily travel distances were shorter. Mink home range size in British Columbia was believed to be inversely related to the quality of forage areas. The overall mink population was believed to be limited by the number of high quality, year-long foraging areas.

Vegetative cover had a significant impact on mink home range size in Montana. The home range size for female mink within a heavily vegetated area was estimated to be 7.7 ha (19.3 acres), while the home range of a female within a sparsely vegetated, heavily grazed area was 20.1 ha (20 acres). Mink in Idaho were believed to be able to sustain themselves in a 1 to 2 km (0.6 to 1.2 miles) section of stream length. Mink

population densities along the coast of Vancouver Island ranged from 1.5 to more than 3 animals/km (1.5 to 3/06 mi) of shoreline. Mink home range size in the prairie pothole region of North Dakota ranged from 2.59 km<sup>2</sup> to 3.8 km<sup>2</sup> (1 to 1.5 mi<sup>2</sup>) and typically included numerous wetlands. Female mink have the smallest and most well defined home range, while those of males tend to be more extensive and less well defined. Intrasexual and intersexual home range overlap was rare in a North Dakota study except during the 2- to 3-week breeding season in April.

Interspersion Requirements

Special Considerations

